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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,613	10/16/2001	Paul L. Sinclair	9792	5753

26890 7590 12/28/2004

JAMES M. STOVER  
NCR CORPORATION  
1700 SOUTH PATTERSON BLVD, WHQ4  
DAYTON, OH 45479

EXAMINER

BLACK, LINH

ART UNIT	PAPER NUMBER
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2167

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/981,613	<b>Applicant(s)</b> SINCLAIR ET AL.	
	<b>Examiner</b> LINH BLACK	<b>Art Unit</b> 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7,9-11,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,9-11,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-6, 8, 12, 15-37 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20041904</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 7, 9-11, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruglikov et al. (USP 6105026), and further in view of Tow et al. (USP 5860070).

2. As per independent claim 7, Kruglikov et al. teach:

“a plurality of storage facilities, each storage facility including data representing a plurality of table rows” - fig. 1, elements 110-130; col. 1, lines 1-26.

“wherein table rows in each storage facility that correspond to a specific table are logically ordered according to a row identifier (row ID)” – fig. 1 (id#, partitioning key 102); col. 1, lines 20-26 . Kruglikov et al. do not explicitly suggest: “row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table; and the first value of the row ID is predominate in determining the order of the rows in the storage facilities and the second value

Art Unit: 2167

determines the order of those rows with identical first values". Tow et al. teach "method and apparatus of enforcing uniqueness of a key value for a row a data table" – the title.

Tow et al. teach: "row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table" – fig. 4, element

410; col. 3, lines 31-46. Tow et al. also teach: "the first value of the row ID is

predominate in determining the order of the rows in the storage facilities and the second value determines the order of those rows with identical first values" – col. 2, lines 47-56.

Tow et al. teach multi-column keys – fig. 4. Tow et al. further teach: for example in

figure 2, no two customer number rows should have the same value. However, but if

the customer number value is the same for two different rows, adding more column (the customer name column) to the key column is needed to make the customer table key

unique. Therefore, if the values of the customer number and customer name are the

same for any two different rows, adding a third column to the key column will be needed

in order to make the customer table key unique. The third value helps differentiate the

rows having equal first and second values. Thus, it would have been obvious to one of

ordinary skill in the art at the time of the invention to combine Kruglikov et al.'s teaching

with Tow et al.'s teaching of multi-column key in order to efficiently enforce the row

uniqueness for each table partition or storage facility.

(limitation: "the third value determines the order of rows with identical first and second values; and the third value is a **uniqueness number** that differentiates rows having

Art Unit: 2167

equal first and second values.” Examiner interprets “uniqueness number as unique among rows having equal first and second values.)

3. As per claims 9-11, Kruglikov et al. teach:

“a plurality of storage facilities, each storage facility including data representing a plurality of table rows” - fig. 1, elements 110-130; col. 1, lines 1-26.

“wherein table rows in each storage facility that correspond to a specific table are logically ordered according to a row identifier (row ID)” – fig. 1 (id#, partitioning key 102); col. 1, lines 20-26 . Kruglikov et al. teach a table with a partition key using ranges of dates (HIRE DATE) for partitioning the table – fig. 1; col. 1, lines 20-26. Kruglikov et al. do not explicitly suggest: “row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table; and the first value of the row ID is predominate in determining the order of the rows in the storage facilities and the second value determines the order of those rows with identical first values”. Tow et al. teach “method and apparatus of enforcing uniqueness of a key value for a row a data table” – the title. Tow et al. teach: “row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table” – fig. 4, element 410; col. 3, lines 31-46. Tow et al. also teach: “the first value of the row ID is predominate in determining the order of the rows in the storage facilities and the second value determines the order of those rows with identical first values” – col. 2, lines 47-56. Tow et al. teach multi-column keys – fig. 4.

Tow et al. teach "Keys are widely (and perhaps almost universally) used in databases to identify specific rows in tables. In database parlance, a key can be one or more columns of each row contained in a table. The values contained in a key uniquely identify each specific row in the table. The term "value" is used to refer to the contents of a row-column, whether numerals, characters, symbols, dates, raw byte strings, etc., or any combination thereof." – col. 2, lines 31-41. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kruglikov et al.'s teaching with Tow et al.'s teaching of multi-column key, and to incorporate ranges of dates in multi-column key in order to efficiently enforce the rows' uniqueness for each table partition or storage facility based on any type of information needed such as dates.

4. As per claims 13-14, Kruglikov et al. teach:

"a plurality of storage facilities, each storage facility including data representing a plurality of table rows" - fig. 1, elements 110-130; col. 1, lines 1-26.

"wherein table rows in each storage facility that correspond to a specific table are logically ordered according to a row identifier (row ID)" – fig. 1 (id#, partitioning key 102); col. 1, lines 20-26. Kruglikov et al. teach a table with a partition key using ranges of dates (HIRE DATE) for partitioning the table – fig. 1; col. 1, lines 20-26. Kruglikov et al. teach "the partitions depicted in Fig. 1 show range partitioning of the records in table 100, however, the methods described herein would also apply to other methods for partitioning e.g., hash partitioning...) – col. 9, lines 25-29. Kruglikov et al. do not

Art Unit: 2167

explicitly suggest: “row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table; and the first value of the row ID is predominate in determining the order of the rows in the storage facilities and the second value determines the order of those rows with identical first values”.

Tow et al. teach “method and apparatus of enforcing uniqueness of a key value for a row a data table” – the title. Tow et al. teach: “row ID comprises a first value based on one or more columns of the table and a second value based on one or more columns of the table” – fig. 4, element 410; col. 3, lines 31-46. Tow et al. also teach: “the first value of the row ID is predominate in determining the order of the rows in the storage facilities and the second value determines the order of those rows with identical first values” – col. 2, lines 47-56. Tow et al. teach multi-column keys – fig. 4. Tow et al. teach “at block 320, the proposed key value is mapped into a target value (in a set of target values). The set of target values may be a set of hash values. Hashing and hash values are well-known in the art” – col. 4, lines 63-66. Tow et al. teach key value with hash value – col. 3, lines 29-53; fig. 4; col. 5, lines 10-26. Tow et al. teach hash/mapped values are distributed as desired” – col. 7, lines 18-28. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kruglikov et al.’s teaching with Tow et al.’s teaching of multi-column key associated with hash values in order to provide an efficient locking mechanism in managing and distribution the data records among the storage facilities.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

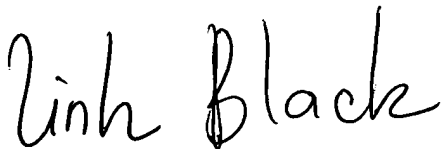
Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINH BLACK whose telephone number is 571-272-4106. The examiner can normally be reached on 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN BREENE can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.




Art Unit: 2167

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LINH BLACK  
Examiner  
Art Unit 2167

December 19, 2004

  
Primary Examiner